

Voice Telephone Services: Status as of December 31, 2021

Industry Analysis Division
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Voice Telephone Services: Status as of December 31, 2021

Introduction

The Commission has used FCC Form 477 to collect subscribership information from providers of voice telephone services – incumbent local exchange carriers (ILECs), competitive local exchange carriers (CLECs), and mobile voice providers – since December 1999.¹ The Commission has required interconnected Voice over Internet Protocol (“interconnected VoIP”) service providers to report subscribership information since December 2008.² Also, starting with the data reported for 2014, FCC Form 477 has been modified to distinguish “over-the-top” (colloquially, “bring your own broadband”) interconnected VoIP subscriptions from other interconnected VoIP subscriptions.³

Comparison to Local Telephone Competition Report

This report was previously titled *Local Telephone Competition*. Reports under the earlier title summarized FCC Form 477 data through December 31, 2013. Reports under the current title provide much of the summarized data as supplemental spreadsheet files, available at <https://www.fcc.gov/voice-telephone-services-report>. A crosswalk between data elements in this report and data elements in the *Local Telephone Competition* report is available at that page.

¹ An Incumbent Local Exchange Carrier is an entity that was providing local exchange telephone service in a particular area on February 8, 1996, the date on which the Telecommunications Act of 1996 was enacted into law. See 47 C.F.R. § 51.5.

² The FCC’s rules (at 47 C.F.R. § 9.3) state:

An interconnected Voice over Internet Protocol (VoIP) service is a service that:

- (1) Enables real-time, two-way voice communications;
- (2) Requires a broadband connection from the user’s location;
- (3) Requires Internet protocol-compatible customer premises equipment; and
- (4) Permits users generally to receive calls that originate on the public switched telephone network and to terminate calls to the public switched telephone network.

We note that the current interpretation of element (4) of the definition excludes certain VoIP services (e.g., those offered by Skype) and subscribers to those services are not reported on FCC Form 477.

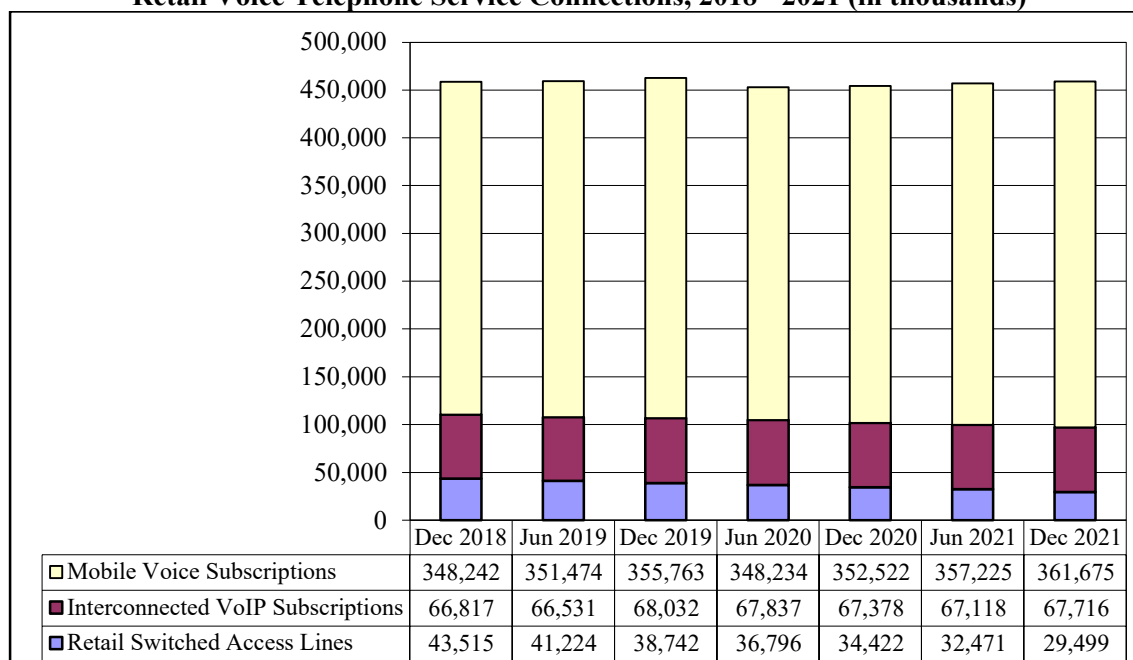
³ The Technical Notes and the Glossary that appear at the end of this report provide more-detailed information about the current FCC Form 477 and the meaning of terms used in this report. To be consistent with modifications to FCC Form 477 adopted in 2013 (to be effective for reporting June 2014 and later data), this report no longer uses the terms “standalone VoIP” and “broadband bundle.” Standalone VoIP in the earlier, *Local Telephone Competition*, reports has a different meaning from “over-the-top” VoIP in this report. In particular, subscriptions reported as standalone VoIP for December 2013 and earlier dates included over-the-top subscriptions as defined in this report and also video-plus-VoIP service subscriptions sold by cable TV system operators and other entities that own last-mile facilities to end-user premises. We note that, accordingly, 13% of total interconnected VoIP subscriptions were categorized as standalone VoIP in December 2013 and, by contrast, 10% of total interconnected VoIP subscriptions were categorized as over-the-top VoIP in December 2014.

Retail Voice Telephone Service Connections

Retail voice telephone service customers are served by two wireline technologies – end-user switched access lines and interconnected VoIP subscriptions – and by mobile wireless subscriptions.⁴

- In December 2021, there were 29 million end-user switched access lines in service, 68 million interconnected VoIP subscriptions, and 362 million mobile subscriptions, for a total of 459 million retail voice telephone service connections in the United States. See Figure 1.
- Over the three-year period presented in Figure 1, interconnected VoIP subscriptions increased at a compound annual growth rate of 0.4%, mobile voice subscriptions increased at a compound annual growth rate of 1.3%, and retail switched access lines declined at a compound annual growth rate of 12.2% per year.⁵

Figure 1
Retail Voice Telephone Service Connections, 2018 - 2021 (in thousands)



Note: Some previously published data may have been updated as FCC Form 477 filers revise their data.

- Of the 97 million wireline retail voice telephone service connections (including both switched access lines and interconnected VoIP subscriptions) in December 2021, 43 million (or 44%) were residential connections and 54 million (or 56%) were business connections.⁶ See Figure 2.
- We believe mobile voice subscriptions decreased by 2% between December 2019 and June 2020 due to a change in accounting procedures by one or more providers.

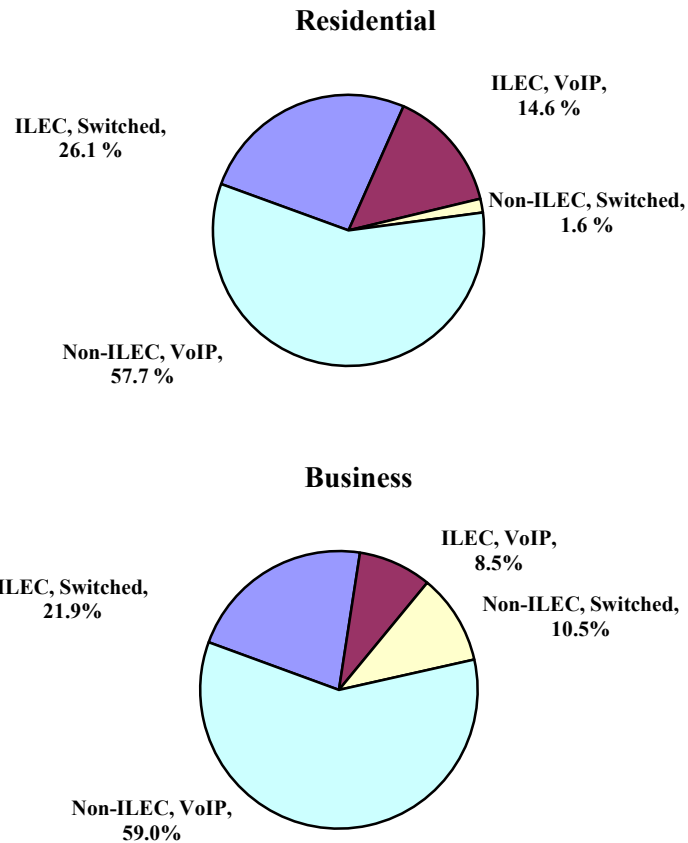
⁴ The presentation of mobile wireless telephone subscriber counts in this report does not constitute, or imply, Commission analysis of the extent to which wireline and mobile wireless telephone services are demand substitutes or complements in general or in any particular situation.

⁵ The compound annual growth rate is a smoothed rate of growth calculated in three steps. First, divide the ending value by the beginning value. Second, raise the result of that division to a power equal to one divided by the number of years in the period (in this case, 3 years, so the power is 1/3). Third, subtract the number one from the result of the second step.

Figure 2
Wireline Retail Voice Telephone Service Connections by Technology, Regulatory Status,
And Customer Type as of December 31, 2021 (in thousands)

Total	Switched Access Lines	Interconnected VoIP	Total
ILEC	23,067	10,913	33,980
Non-ILEC	6,432	56,803	63,235
Total	29,499	67,716	97,215
Residential			
ILEC	11,202	6,272	17,474
Non-ILEC	705	24,749	25,455
Residential Total	11,907	31,021	42,928
Business			
ILEC	11,865	4,641	16,506
Non-ILEC	5,726	32,054	37,780
Business Total	17,592	36,695	54,286

Note: Figures may not sum to totals due to rounding. A voice-service affiliate of an ILEC that is operating outside of the ILEC's traditional service area ("study area") is a Non-ILEC.



- Cross-classified by technology and the retailer’s regulatory status in Figure 2, the 43 million wireline residential connections in December 2021 were: 26.1% ILEC switched access lines, 57.7% non-ILEC interconnected VoIP subscriptions, 14.6% ILEC interconnected VoIP subscriptions, and 1.6% non-ILEC switched access lines. Similarly, the 54 million wireline business connections were: 21.9% ILEC switched access lines, 59.0% non-ILEC interconnected VoIP subscriptions, 8.5% ILEC interconnected VoIP subscriptions, and 10.5% non-ILEC switched access lines.

Retail Service Relationships

Respondents submit two types of information about retail service relationships on the current FCC Form 477.

- Interconnected VoIP service retailers distinguish over-the-top (“OTT”) interconnected VoIP subscriptions—where the end user accesses the service using a broadband connection from an entity that is not affiliated with the VoIP service retailer—from all other interconnected VoIP subscriptions.⁷ See Figure 3.
- Retailers of switched access lines and retailers of interconnected VoIP service distinguish between sales to end users who also purchase Internet access from them (including affiliates) and those who do not. See Figure 4.

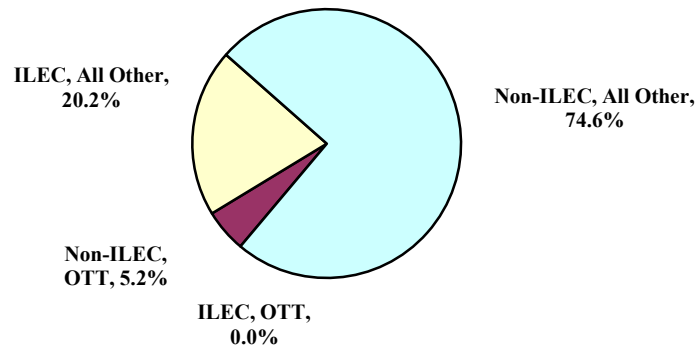
⁷ A broadband connection may or may not provide the end user with internet access.

Figure 3
Interconnected VoIP Subscriberhip by Reported Service Features, Regulatory Status,
and Customer Type as of December 31, 2021 (in thousands)

Total	Over-the-Top (OTT)	All Other VoIP	Total
ILEC	57	10,856	10,913
Non-ILEC	17,269	39,534	56,803
Total	17,325	50,391	67,716
Residential			
ILEC	2	6,270	6,272
Non-ILEC	1,607	23,143	24,749
Residential Total	1,609	29,413	31,021
Business			
ILEC	55	4,586	4,641
Non-ILEC	15,662	16,392	32,054
Business Total	15,717	20,978	36,695

Note: Figures may not sum to totals due to rounding.

Residential



Business

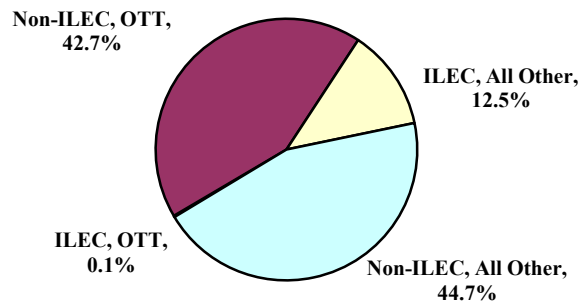
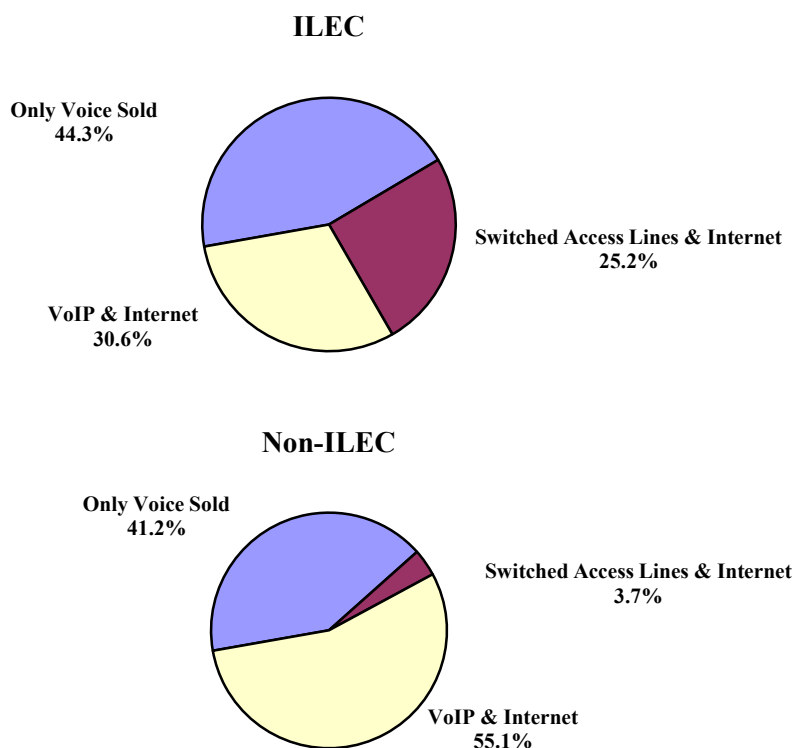


Figure 4
Retail Relationships of Wireline Voice Telephone Service with Internet Access Service
By Regulatory Status as of December 31, 2021 (in thousands)

Total	ILEC	Non-ILEC	Total
Switched Access Lines	23,067	6,432	29,499
Over-the-Top VoIP	57	17,269	17,325
All Other VoIP	10,856	39,534	50,391
Total	33,980	63,235	97,215
Sold with Internet			
Switched Access Lines	8,557	2,351	10,908
Over-the-Top VoIP	0	0	0
All Other VoIP	10,382	34,849	45,231
Total	18,939	37,200	56,139
Sold without Internet			
Switched Access Lines	14,510	4,081	18,591
Over-the-Top VoIP	57	17,269	17,325
All Other VoIP	474	4,685	5,160
Total	15,041	26,035	41,076

Note: Figures may not sum totals due to rounding.



Detailed Voice Telephone Services Data

- Table 1 summarizes national-level voice telephone service subscription data for December 2020, and June and December 2021 for individual data elements collected by FCC Form 477.
- Table 2 shows the number of entities that reported subscription data for the same time periods.
- Table 3 shows residential wireline voice telephone service connections by state for December 2021.
- Table 4 shows mobile voice telephone service subscriptions by state for December 2021.

Tables 1, 2, 3, and 4 are available in Excel format at <https://www.fcc.gov/voice-telephone-services-report>. Also available at that page are:

- State-level Subscriptions table in Excel format (data back to December 2020)
- State-level Number of Providers table in Excel format (data back to December 2020)
- County-level Subscription information in Excel format (data back to June 2014)
- CSV-format file of the consistent data series that are available back to December 2008, when interconnected VoIP retailers were first required to report subscription information on FCC Form 477.

Earlier data, back to December 1999, are available in the Local Telephone Competition reports at <https://www.fcc.gov/general/local-telephone-competition-reports>. However, researchers using the complete data series for trend analysis should be aware of the following discontinuities in the data.

- Between December 1999 and December 2004, FCC Form 477 collected state-by-state data only from local exchange carriers with at least 10,000 end-user switched access lines in service in the state, and from facilities-based mobile voice carriers with at least 10,000 mobile voice subscriptions in service in the state.
- Prior to December 2008, interconnected VoIP service retailers were not required to submit FCC Form 477, but an unknown amount of interconnected VoIP service was included along with the switched access lines reported by some FCC Form 477 filers.
- As discussed earlier in this report, the category standalone interconnected VoIP that was reported from December 2008 to December 2013 is different (that is, includes more subscriptions) than the category over-the-top interconnected VoIP that is reported starting with the June 2014 data.⁸

⁸ See footnote 3, above.

Table 1. Voice Subscriptions (in thousands) - Total for the United States

Reference	Data element	Dec 2020	June 2021	Dec 2021
1	Mobile telephony	352,522	357,225	361,675
2	Directly-billed or prepaid	303,547	307,097	322,540
3	Not directly-billed or prepaid	48,974	50,128	39,135
4	Wireline End-User Switched Access Lines and Interconnected VoIP Subscriptions	101,800	99,589	97,215
5	Incumbent LECs	38,353	36,385	33,980
6	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	63,447	63,204	63,235
7	Consumer-grade service	47,674	45,765	42,928
8	Incumbent LECs	20,071	19,016	17,474
9	Other (Non-ILECs)	27,603	26,749	25,455
10	Business & Government-grade service	54,126	53,824	54,286
11	Incumbent LECs	18,282	17,370	16,506
12	Other (Non-ILECs)	35,844	36,455	37,780
13	Local exchange telephone service (Switched Access Lines)	34,422	32,471	29,499
14	Incumbent LECs	26,767	25,286	23,067
15	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	7,655	7,185	6,432
16	Consumer-grade service	13,837	13,148	11,907
17	Incumbent LECs	13,027	12,372	11,202
18	Other (Non-ILECs)	809	776	705
19	Business & Government-grade service	20,585	19,323	17,592
20	Incumbent LECs	13,740	12,914	11,865
21	Other (Non-ILECs)	6,845	6,409	5,726
22	Interconnected VoIP Subscriptions - Note: Includes both Over-the-top (OTT) and All Other sub-categories.	67,378	67,118	67,716
23	Incumbent LECs	11,586	11,099	10,913
24	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	55,792	56,018	56,803
25	Consumer-grade service	33,837	32,617	31,021
26	Incumbent LECs	7,044	6,644	6,272
27	Other (Non-ILECs)	26,794	25,973	24,749
28	Business & Government-grade service	33,541	34,501	36,695
29	Incumbent LECs	4,542	4,456	4,641
30	Other (Non-ILECs)	28,999	30,045	32,054
31	Over-the-top interconnected VoIP	14,441	15,697	17,325
32	Incumbent LECs	68	69	57
33	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	14,373	15,628	17,269
34	Consumer-grade service	1,960	1,874	1,609
35	Incumbent LECs	1	0	2
36	Other (Non-ILECs)	1,958	1,873	1,607
37	Business & Government-grade service	12,481	13,823	15,717
38	Incumbent LECs	67	69	55
39	Other (Non-ILECs)	12,414	13,755	15,662
40	All Other interconnected VoIP	52,937	51,421	50,391
41	Incumbent LECs	11,518	11,030	10,856
42	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	41,419	40,390	39,534
43	Consumer-grade service	31,877	30,743	29,413
44	Incumbent LECs	7,042	6,643	6,270
45	Other (Non-ILECs)	24,835	24,100	23,143
46	Business & Government-grade service	21,059	20,678	20,978
47	Incumbent LECs	4,475	4,387	4,586
48	Other (Non-ILECs)	16,584	16,291	16,392
49	Local exchange telephone service by last-mile delivery medium	34,422	32,471	29,499
50	Fiber-to-the-premises	4,575	4,660	4,377
51	Incumbent LECs	2,691	2,793	2,626
52	Other (Non-ILECs)	1,884	1,868	1,750
53	Coaxial cable	442	438	406
54	Incumbent LECs	52	66	61
55	Other (Non-ILECs)	391	372	345

Table 1. Voice Subscriptions (in thousands) - Total for the United States

Reference	Data element	Dec 2020	June 2021	Dec 2021
56	Terrestrial fixed wireless	33	46	22
57	Incumbent LECs	13	13	12
58	Other (Non-ILECs)	20	33	10
59	Copper local loop	29,366	27,327	24,694
60	Incumbent LECs	24,009	22,414	20,367
61	Other (Non-ILECs)	5,357	4,913	4,327
62	All Other interconnected VoIP by last-mile delivery medium	52,937	51,421	50,391
63	Fiber-to-the-premises	8,364	10,277	10,408
64	Incumbent LECs	5,729	5,592	5,512
65	Other (Non-ILECs)	2,635	4,684	4,896
66	Coaxial cable	32,204	29,445	28,055
67	Incumbent LECs	12	16	14
68	Other (Non-ILECs)	32,192	29,429	28,041
69	Terrestrial fixed wireless or satellite	221	226	591
70	Incumbent LECs	0	1	2
71	Other (Non-ILECs)	221	225	590
72	Copper local loop	12,148	11,473	11,336
73	Incumbent LECs	5,777	5,421	5,328
74	Other (Non-ILECs)	6,371	6,052	6,008
75	Non-Incumbent LEC local exchange telephone service by means of provisioning	7,655	7,185	6,432
76	Provided over owned last-mile facilities	2,956	2,829	2,588
77	Provided over UNE-L obtained from unaffiliated entity	1,164	1,014	571
78	Provided over other services obtained from unaffiliated entity	3,531	3,342	3,272
79	Incumbent LEC local exchange telephone service provided to unaffiliated carriers for resale	3,650	3,368	3,078
80	Wholesale lines	2,466	2,338	2,197
81	UNE-L	1,184	1,030	881
82	Local exchange telephone service and long-distance service	34,422	32,471	29,499
83	Consumer-grade service	13,837	13,148	11,907
84	Incumbent LEC is preferred long-distance carrier for its local exchange service customer	9,057	8,403	7,445
85	Incumbent LEC is not preferred long-distance carrier for its local exchange service customer	3,970	3,969	3,757
86	Non-ILEC is preferred long-distance carrier for its local exchange service customer	663	647	625
87	Non-ILEC is not preferred long-distance carrier for its local exchange service customer	147	129	81
88	Business & Government-grade service	20,585	19,323	17,592
89	Incumbent LEC is preferred long-distance carrier for its local exchange service customer	8,232	7,331	6,719
90	Incumbent LEC is not preferred long-distance carrier for its local exchange service customer	5,506	5,583	5,147
91	Non-ILEC is preferred long-distance carrier for its local exchange service customer	5,008	4,822	4,416
92	Non-ILEC is not preferred long-distance carrier for its local exchange service customer	1,834	1,587	1,310
93	End user buys local exchange telephone service and Internet access service from same entity	12,600	12,241	10,908
94	End user buys both services from incumbent LEC or affiliates	10,021	9,828	8,557
95	End user buys both services from Non-ILEC or affiliates	2,579	2,413	2,351
96	End user buys interconnected VoIP and Internet access service from same entity	47,608	45,625	45,231
97	End user buys both services from incumbent LEC or affiliates	11,160	10,077	10,382
98	End user buys both services from Non-ILEC or affiliates	36,448	35,548	34,849

Table 2. Number of Providers Reporting Voice Subscriptions - Total for the United States

Reference	Data element	Dec 2020	June 2021	Dec 2021
1	Mobile telephony	65	61	60
2	Directly-billed or prepaid	63	58	55
3	Not directly-billed or prepaid	9	10	12
4	Wireline End-User Switched Access Lines and Interconnected VoIP Subscriptions	2,191	2,261	2,299
5	Incumbent LECs	713	711	707
6	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	1,814	1,893	1,937
7	Consumer-grade service	1,319	1,314	1,314
8	Incumbent LECs	712	711	707
9	Other (Non-ILECs)	932	934	940
10	Business & Government-grade service	2,087	2,180	2,225
11	Incumbent LECs	710	708	704
12	Other (Non-ILECs)	1,708	1,804	1,858
13	Local exchange telephone service (Switched Access Lines)	952	952	937
14	Incumbent LECs	707	707	702
15	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	507	511	497
16	Consumer-grade service	856	861	837
17	Incumbent LECs	707	707	702
18	Other (Non-ILECs)	401	408	386
19	Business & Government-grade service	939	938	924
20	Incumbent LECs	705	703	698
21	Other (Non-ILECs)	492	495	483
22	Interconnected VoIP Subscriptions - Note: Includes both Over-the-top (OTT) and All Other sub-categories.	1,670	1,751	1,802
23	Incumbent LECs	167	179	190
24	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	1,606	1,681	1,733
25	Consumer-grade service	713	719	741
26	Incumbent LECs	92	102	113
27	Other (Non-ILECs)	664	664	682
28	Business & Government-grade service	1,564	1,665	1,725
29	Incumbent LECs	161	175	183
30	Other (Non-ILECs)	1,502	1,594	1,657
31	Over-the-top interconnected VoIP	1,071	1,190	1,223
32	Incumbent LECs	33	39	37
33	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	1,056	1,174	1,208
34	Consumer-grade service	178	214	198
35	Incumbent LECs	9	12	12
36	Other (Non-ILECs)	172	207	192
37	Business & Government-grade service	1,027	1,144	1,186
38	Incumbent LECs	33	38	35
39	Other (Non-ILECs)	1,012	1,129	1,172
40	All Other interconnected VoIP	866	830	855
41	Incumbent LECs	159	167	182
42	Other (Non-ILECs) - Note: ILEC voice-service affiliate operating outside ILEC's study area is included here.	805	765	787
43	Consumer-grade service	595	576	610
44	Incumbent LECs	87	96	107
45	Other (Non-ILECs)	548	524	553
46	Business & Government-grade service	789	773	800
47	Incumbent LECs	153	163	176
48	Other (Non-ILECs)	729	707	732
49	Local exchange telephone service by last-mile delivery medium	952	952	937
50	Fiber-to-the-premises	768	777	768
51	Incumbent LECs	632	633	633
52	Other (Non-ILECs)	375	383	379
53	Coaxial cable	87	88	86
54	Incumbent LECs	23	25	27
55	Other (Non-ILECs)	75	73	70

Table 2. Number of Providers Reporting Voice Subscriptions - Total for the United States

Reference	Data element	Dec 2020	June 2021	Dec 2021
56	Terrestrial fixed wireless	80	90	74
57	Incumbent LECs	49	50	43
58	Other (Non-ILECs)	47	53	43
59	Copper local loop	706	698	663
60	Incumbent LECs	525	519	490
61	Other (Non-ILECs)	306	301	293
62	All Other interconnected VoIP by last-mile delivery medium	866	830	855
63	Fiber-to-the-premises	600	604	633
64	Incumbent LECs	149	157	172
65	Other (Non-ILECs)	543	544	571
66	Coaxial cable	212	206	193
67	Incumbent LECs	12	14	14
68	Other (Non-ILECs)	205	199	187
69	Terrestrial fixed wireless or satellite	315	286	289
70	Incumbent LECs	12	11	16
71	Other (Non-ILECs)	308	278	279
72	Copper local loop	214	207	214
73	Incumbent LECs	61	65	68
74	Other (Non-ILECs)	182	171	179
75	Non-Incumbent LEC local exchange telephone service by means of provisioning	507	511	497
76	Provided over owned last-mile facilities	392	393	378
77	Provided over UNE-L obtained from unaffiliated entity	97	94	87
78	Provided over other services obtained from unaffiliated entity	178	177	171
79	Incumbent LEC local exchange telephone service provided to unaffiliated carriers for resale	23	23	24
80	Wholesale lines	21	20	23
81	UNE-L	11	12	10
82	Local exchange telephone service and long-distance service	952	952	937
83	Consumer-grade service	856	861	837
84	Incumbent LEC is preferred long-distance carrier for its local exchange service customer	665	661	657
85	Incumbent LEC is not preferred long-distance carrier for its local exchange service customer	658	652	646
86	Non-ILEC is preferred long-distance carrier for its local exchange service customer	380	379	362
87	Non-ILEC is not preferred long-distance carrier for its local exchange service customer	265	277	265
88	Business & Government-grade service	939	938	924
89	Incumbent LEC is preferred long-distance carrier for its local exchange service customer	664	658	652
90	Incumbent LEC is not preferred long-distance carrier for its local exchange service customer	637	637	630
91	Non-ILEC is preferred long-distance carrier for its local exchange service customer	456	453	441
92	Non-ILEC is not preferred long-distance carrier for its local exchange service customer	311	322	313
93	End user buys local exchange telephone service and Internet access service from same entity	880	879	860
94	End user buys both services from incumbent LEC or affiliates	696	697	688
95	End user buys both services from Non-ILEC or affiliates	440	442	425
96	End user buys interconnected VoIP and Internet access service from same entity	791	768	770
97	End user buys both services from incumbent LEC or affiliates	147	156	167
98	End user buys both services from Non-ILEC or affiliates	734	707	709

**Table 3: Residential Wireline Voice Telephone Service Connections and Households by State
as of December 31, 2021**
(Connections and households, in thousands)

State	Households	Switched Access		Interconnected VoIP		Total	
		Connections	Ratio	Connections	Ratio	Connections	Ratio
Alabama	1,903	185	0.10	379	0.20	564	0.30
Alaska	261	*	*	*	*	72	0.28
American Samoa	10	5	0.52	-	0.00	5	0.52
Arizona	2,684	185	0.07	426	0.16	612	0.23
Arkansas	1,158	134	0.12	126	0.11	260	0.22
California	13,218	1,138	0.09	3,542	0.27	4,680	0.35
Colorado	2,228	229	0.10	438	0.20	667	0.30
Connecticut	1,397	125	0.09	590	0.42	715	0.51
Delaware	381	25	0.07	184	0.48	210	0.55
District of Columbia	310	23	0.07	77	0.25	100	0.32
Florida	8,157	429	0.05	2,193	0.27	2,622	0.32
Georgia	3,885	419	0.11	815	0.21	1,234	0.32
Guam	42	13	0.31	*	*	*	*
Hawaii	478	75	0.16	126	0.26	200	0.42
Idaho	657	89	0.14	40	0.06	129	0.20
Illinois	4,930	354	0.07	1,091	0.22	1,445	0.29
Indiana	2,623	247	0.09	454	0.17	700	0.27
Iowa	1,276	241	0.19	174	0.14	415	0.33
Kansas	1,140	109	0.10	161	0.14	270	0.24
Kentucky	1,748	298	0.17	305	0.17	603	0.34
Louisiana	1,749	144	0.08	321	0.18	465	0.27
Maine	571	101	0.18	158	0.28	260	0.46
Maryland	2,294	175	0.08	879	0.38	1,054	0.46
Massachusetts	2,714	174	0.06	1,201	0.44	1,375	0.51
Michigan	3,977	262	0.07	969	0.24	1,231	0.31
Minnesota	2,229	360	0.16	351	0.16	711	0.32
Mississippi	1,109	101	0.09	145	0.13	246	0.22
Missouri	2,434	229	0.09	448	0.18	678	0.28
Montana	436	84	0.19	72	0.16	156	0.36
Nebraska	767	121	0.16	114	0.15	235	0.31
Nevada	1,142	76	0.07	231	0.20	307	0.27
New Hampshire	540	74	0.14	214	0.40	289	0.53
New Jersey	3,397	192	0.06	1,679	0.49	1,871	0.55
New Mexico	798	131	0.16	97	0.12	228	0.29
New York	7,530	528	0.07	3,139	0.42	3,667	0.49
North Carolina	4,035	445	0.11	992	0.25	1,437	0.36
North Dakota	317	61	0.19	25	0.08	86	0.27
Northern Mariana Islands	16	8	0.50	*	*	*	*
Ohio	4,754	478	0.10	1,076	0.23	1,554	0.33
Oklahoma	1,504	128	0.09	195	0.13	324	0.22
Oregon	1,658	184	0.11	323	0.19	507	0.31
Pennsylvania	5,148	608	0.12	1,736	0.34	2,344	0.46
Puerto Rico	1,197	*	*	*	*	*	*
Rhode Island	427	28	0.07	144	0.34	171	0.40
South Carolina	1,976	252	0.13	396	0.20	648	0.33
South Dakota	346	72	0.21	31	0.09	103	0.30
Tennessee	2,665	289	0.11	481	0.18	771	0.29
Texas	10,239	638	0.06	1,748	0.17	2,386	0.23
Utah	1,034	88	0.09	149	0.14	237	0.23
Vermont	263	81	0.31	75	0.29	156	0.59
Virgin Islands	30	9	0.30	0	0.00	9	0.30
Virginia	3,249	324	0.10	938	0.29	1,262	0.39
Washington	2,932	306	0.10	629	0.21	935	0.32
West Virginia	711	175	0.25	167	0.23	342	0.48
Wisconsin	2,402	285	0.12	512	0.21	798	0.33
Wyoming	231	33	0.14	35	0.15	68	0.29
United States	125,305	11,907	0.10	31,021	0.25	42,928	0.34

- = Rounds to Zero; * = Data withheld to maintain firm confidentiality.

Notes: Numbers may not sum to totals due to rounding. Total fixed voice connections equal the sum of switched access lines and interconnected VoIP subscriptions. We calculate residential fixed voice connections per household using, in the denominator, U.S. household estimates from the 2017-2021 ACS 5-year estimates and, for Puerto Rico and the other inhabited island areas, Census 2010 households.

**Table 4: Mobile Voice Telephone Service Subscriptions and Population by State
as of December 31, 2021**
(Connections and population, in thousands)

State	Population	Directly-Billed		Not Directly-Billed		Total	
		Subscriptions	Ratio	Subscriptions	Ratio	Subscriptions	Ratio
Alabama	4,998	4,853	0.97	411	0.08	5,265	1.05
Alaska	736	708	0.96	33	0.04	741	1.01
American Samoa	56	*	*	*	*	*	*
Arizona	7,079	6,911	0.98	542	0.08	7,452	1.05
Arkansas	3,006	2,975	0.99	328	0.11	3,303	1.10
California	39,455	40,688	1.03	4,827	0.12	45,515	1.15
Colorado	5,723	5,466	0.96	612	0.11	6,078	1.06
Connecticut	3,605	3,672	1.02	435	0.12	4,107	1.14
Delaware	982	967	0.98	123	0.13	1,090	1.11
District of Columbia	683	1,400	2.05	212	0.31	1,611	2.36
Florida	21,340	20,940	0.98	2,345	0.11	23,285	1.09
Georgia	10,626	10,652	1.00	1,100	0.10	11,753	1.11
Guam	159	126	0.79	94	0.59	220	1.38
Hawaii	1,453	1,463	1.01	148	0.10	1,612	1.11
Idaho	1,812	1,707	0.94	117	0.06	1,824	1.01
Illinois	12,822	12,563	0.98	1,797	0.14	14,360	1.12
Indiana	6,751	5,977	0.89	913	0.14	6,890	1.02
Iowa	3,179	3,058	0.96	187	0.06	3,245	1.02
Kansas	2,932	2,770	0.94	199	0.07	2,969	1.01
Kentucky	4,494	3,960	0.88	591	0.13	4,551	1.01
Louisiana	4,657	4,455	0.96	595	0.13	5,050	1.08
Maine	1,357	1,247	0.92	132	0.10	1,379	1.02
Maryland	6,149	5,991	0.97	699	0.11	6,690	1.09
Massachusetts	6,992	6,876	0.98	823	0.12	7,699	1.10
Michigan	10,063	9,325	0.93	1,370	0.14	10,695	1.06
Minnesota	5,670	5,389	0.95	566	0.10	5,954	1.05
Mississippi	2,967	2,787	0.94	255	0.09	3,042	1.03
Missouri	6,142	5,556	0.90	670	0.11	6,226	1.01
Montana	1,078	1,033	0.96	79	0.07	1,112	1.03
Nebraska	1,951	1,912	0.98	154	0.08	2,066	1.06
Nevada	3,059	2,961	0.97	291	0.10	3,252	1.06
New Hampshire	1,372	1,279	0.93	149	0.11	1,428	1.04
New Jersey	9,234	9,494	1.03	1,201	0.13	10,695	1.16
New Mexico	2,109	2,038	0.97	184	0.09	2,221	1.05
New York	20,115	20,185	1.00	3,368	0.17	23,553	1.17
North Carolina	10,367	9,600	0.93	1,321	0.13	10,921	1.05
North Dakota	773	778	1.01	34	0.04	811	1.05
Northern Mariana Islands	54	*	*	*	*	*	*
Ohio	11,770	11,020	0.94	1,626	0.14	12,646	1.07
Oklahoma	3,948	3,548	0.90	372	0.09	3,920	0.99
Oregon	4,207	4,010	0.95	489	0.12	4,499	1.07
Pennsylvania	12,971	12,135	0.94	1,589	0.12	13,724	1.06
Puerto Rico	3,311	1,708	0.52	1,461	0.44	3,169	0.96
Rhode Island	1,092	1,043	0.96	111	0.10	1,154	1.06
South Carolina	5,079	4,628	0.91	528	0.10	5,156	1.02
South Dakota	882	858	0.97	37	0.04	895	1.01
Tennessee	6,859	6,631	0.97	664	0.10	7,295	1.06
Texas	28,863	28,654	0.99	2,442	0.08	31,096	1.08
Utah	3,231	2,894	0.90	323	0.10	3,217	1.00
Vermont	642	534	0.83	81	0.13	615	0.96
Virgin Islands	106	*	*	*	*	*	*
Virginia	8,582	8,492	0.99	727	0.08	9,219	1.07
Washington	7,617	7,303	0.96	791	0.10	8,095	1.06
West Virginia	1,801	1,404	0.78	206	0.11	1,610	0.89
Wisconsin	5,872	5,179	0.88	683	0.12	5,862	1.00
Wyoming	577	595	1.03	36	0.06	632	1.10
United States	333,412	322,540	0.97	39,135	0.12	361,675	1.08

- = Rounds to Zero; * = Data withheld to maintain firm confidentiality.

Notes: Numbers may not sum to totals due to rounding. Directly-billed subscriptions are those where the customer is directly billed by the facilities-based provider. Total mobile voice subscriptions equal the sum of subscriptions that are directly-billed and those that are not. We calculate mobile voice subscriptions per person using, in the denominator, U.S. population estimates from the 2017-2021 ACS 5-year estimates and, for Puerto Rico and the other inhabited island areas, Census 2010 populations.

Technical Notes

Detailed information about the current FCC Form 477 reporting requirements is available at <https://www.fcc.gov/general/form-477-resources-filers>.

Counting lines and subscribers

- FCC Form 477 counts both switched access lines and interconnected VoIP subscriptions as the maximum number of calls that may be active, simultaneously, from the end user's location under the purchased service plan. All VoIP subscriptions discussed in this report are interconnected VoIP subscriptions.
- FCC Form 477 data may not count all VoIP phone connections to Internet Protocol Private Branch Exchange (IP PBX) equipment that is owned by business end users because of the variety of ways the IP PBX may connect to the public switched telephone network.

Holding company-subsidary relationships

- When counting service providers that report voice telephone service in a particular geography, we count a holding company or common-control entity no more than once in any specified sub-category of total providers.
- Nationwide counts of providers are unique counts for any specified sub-category of total providers (for example, all non-ILECs or all interconnected VoIP providers); an entity operating in multiple states is counted only once.

ILEC-CLEC affiliations

- If a CLEC is affiliated with an ILEC and reports some end-user switched access lines or interconnected VoIP subscriptions in the ILEC's service area in the state, then the switched access lines or interconnected VoIP subscriptions reported by the CLEC are allocated between the ILEC and non-ILEC categories based on staff estimates.

Mobile voice subscriptions

- Commercial mobile radio service carriers that own or operate wireless networks report both their retail voice service subscriptions and the retail subscriptions of the mobile voice service resellers that use their network. Mobile voice service resellers do not file FCC Form 477.
- Providers may assign subscriptions to a particular state based on the area code of the device's telephone number, or by using some other method that best reflects the subscriber's location, such as a billing address of the device's place of primary use address.

UNE-Platform lines replaced by commercial agreements

- UNE-Platform (UNE-P) was the combination of ILEC loop UNE, switching UNE, and transport UNE. The Commission directed CLECs to migrate their retail customers served by UNE-P to an alternative arrangement within 12 months of the effective date of the *Triennial Review Remand Order*, that is, by March 11, 2006. See C.F.R. § 51.319(d)(2)(ii). Such lines are reported on FCC Form 477 as ILEC wholesale lines provided to unaffiliated providers for resale.

Glossary

Term	Definition
All Other interconnected VoIP	Interconnected VoIP service other than OTT interconnected VoIP. (See the definition of OTT VoIP, below.)
Broadband connection	A wired line or wireless channel that terminates at an end-user location and enables the end user to receive information from and/or send information to the Internet at information transfer rates exceeding 200 kilobits per second in at least one direction.
Circuit switching	A method of completing electronic communications in which a transmission path is established for dedicated use by a communication; the basis of the public switched telephone network.
Coaxial cable	The technology widely used by cable system operators to terminate their services at the end user's premises.
Copper local loop	The technology widely used by telephone companies to terminate their service at the end user's premises.
CLEC	Competitive Local Exchange Carrier: A local exchange carrier (LEC) that operates within the traditional service area of an unaffiliated incumbent LEC.
End users	Residential, business, institutional, or government entities that use services for their own purposes and who do not resell such services to other entities.
Fixed wireless service	A radio communication service between specified fixed points.
FTTP or FTTH	Fiber to the Premises (Home): A network access architecture in which optical fiber is deployed all the way to the customer's premises (home).
Internet access service	Service that provides end users access to the Internet.
ILEC	Incumbent Local Exchange Carrier: A company or cooperative that was providing telephone service in a localized area, typically on a monopoly basis, prior to enactment of the Telecommunications Act of 1996.
Internet protocol or IP	A language and set of formal rules that govern how packets transit the Internet.
Interconnected VoIP	A service that enables real-time, two-way voice communications; requires a broadband connection from the user's location; requires Internet-protocol compatible customer premises equipment; and permits users generally to receive calls that originate on the public switched telephone network and to terminate calls to the public switched telephone network.
LEC	Local Exchange Carrier: A company that provides telephone service within a localized area and access services that connect its customers to long-distance (Interexchange Carrier) networks.
Local loop	The physical connection between the customer's premises and the telephone company's local switching office, typically provided using copper, fiber, or a combination of copper and fiber facilities.
Mobile wireless service	A radio communication service between mobile and fixed stations, or between mobile stations.

Non-ILEC	Any provider of communications services who does not have ILEC regulatory status. A voice-service affiliate of an ILEC that is operating outside the ILEC's traditional service area ("study area") is a Non-ILEC.
OTT interconnected VoIP	Over-the-top interconnected VoIP: Service delivered to the end-user customer's premises over a high-capacity connection that the customer obtains (that is, buys), or has the use of, from an entity not affiliated with the interconnected VoIP service provider. (Colloquially, "bring-your-own-broadband.")
PBX	Private Branch Exchange: A communications switch that is owned or leased by the service provider's end-user customer and generally located on the customer's premises.
Packet switching	A method of completing electronic communications in which the information is disassembled into discrete packets that are transmitted independently and later reassembled; IP is an example.
Retail wireline voice telephone service	Switched access lines and interconnected VoIP subscriptions for which an end user is the customer.
Switched access line	A service connection between an end user and the local telephone company's switch; the basis of plain old telephone service (POTS).
UNE	Unbundled Network Element: A physical or functional element of an ILEC network that must be provided to a CLEC at a cost-based price, as provide for in the Telecommunications Act of 1996.
UNE-L	UNE-Loop: An ILEC unbundled local loop provided to a CLEC at a cost-based price.
Wholesale switched access lines	Local telephone service provided to an unaffiliated telephone company, which resells the service to end users; typically provided by an ILEC to a CLEC.